Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (canceled)
2. (canceled)
3. (canceled)
4. (canceled)

5. (currently amended) A computer system, comprising:

a processor which performs ~~programmed to perform~~ an arithmetic performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t, where t varies from 1 to T, by determining coefficients $(A+\alpha_t)$, where the values α_t are defined as

$$\alpha_t = \left[\frac{R - \overline{R} - A\sum_{k=1}^{T}(R_k - \overline{R}_k)}{\sum_{k=1}^{T}(R_k - \overline{R}_k)^2}\right](R_t - \overline{R}_t),$$

where A has any predetermined value, R_t is a portfolio return for period t, $\overline{R}_t$ is a benchmark return for period t, R is determined by

$$R = [\prod_{t=1}^{T}(1+R_t)] - 1,$$

and $\overline{R}$ is determined by

$$\overline{R} = [\prod_{t=1}^{T}(1+\overline{R}_t)] - 1;$$

and determining the portfolio relative performance as

$$R - \overline{R} = \sum_{t=1}^{T}(A+\alpha_t)(R_t - \overline{R}_t);\ \text{and}$$

a display device coupled to the processor for displaying a result of the arithmetic performance attribution computation.

6. (currently amended) A computer readable medium <u>containing instructions</u> ~~which stores code~~ for programming a processor to perform an arithmetic performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t, where t varies from 1 to T, by determining coefficients $(A+\alpha_t)$, where the values α_t are defined as

$$\alpha_t = \left[\frac{R - \overline{R} - A\sum_{k=1}^{T}(R_k - \overline{R}_k)}{\sum_{k=1}^{T}(R_k - \overline{R}_k)^2} \right](R_t - \overline{R}_t),$$

where A has any predetermined value, R_t is a portfolio return for period t, $\overline{R}_t$ is a benchmark return for period t, R is determined by

$$R = [\prod_{t=1}^{T}(1+R_t)] - 1,$$

and $\overline{R}$ is determined by

$$\overline{R} = [\prod_{t=1}^{T}(1+\overline{R}_t)] - 1;$$

and determining the portfolio relative performance as $R - \overline{R} = \sum_{t=1}^{T}(A+\alpha_t)(R_t - \overline{R}_t)$.

7. (canceled)

8. (canceled)

9. (canceled)

10. (currently amended) A computer system, comprising:

a processor <u>which performs</u> ~~programmed to perform~~ a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t, where t varies from 1 to T, by determining attribution effects for issue selection $(1+I_{it}^G)$ given by

$$1 + I_{it}^G = \frac{1 + w_{it} r_{it}}{1 + w_{it} \overline{r}_{it}} \Gamma_t^I ,$$

and determining attribution effects for sector selection $(1+S_{it}^G)$ given by

$$1 + S_{it}^G = \left(\frac{1 + w_{it} \overline{r}_{it}}{1 + \overline{w}_{it} \overline{r}_{it}} \right) \left(\frac{1 + \overline{w}_{it} \overline{R}_t}{1 + w_{it} \overline{R}_t} \right) \Gamma_t^S ,$$

where r_{jt} is a portfolio return for sector *j* for period *t*, $\overline{r}_{jt}$ is a benchmark return for sector *j* for period *t*, w_{jt} is a weight for r_{jt}, $\overline{w}_{jt}$ is a weight for $\overline{r}_{jt}$, *R* is determined by

$$R = [\prod_{t=1}^{T}(1+R_t)] - 1$$

and $\overline{R}$ is determined by

$$\overline{R} = [\prod_{t=1}^{T}(1+\overline{R}_t)] - 1,$$

and determining the portfolio performance as

$$\frac{1+R}{1+\overline{R}} = \prod_{t=1}^{T}\prod_{i=1}^{N}(1+I_{it}^{G})(1+S_{it}^{G});$$

and

a display device coupled to the processor for displaying a result of the geometric performance attribution computation.

11. (original) The system of claim 10, wherein the values of $\Gamma_t{}^{I}$ are

$$\Gamma_t^I = \left[\frac{1+R_t}{1+\tilde{R}_t}\prod_{j=1}^{N}\left(\frac{1+w_{jt}\overline{r}_{jt}}{1+w_{jt}r_{jt}}\right)\right]^{1/N}$$ and the values of Γ_t^S are

$$\Gamma_t^S = \left[\frac{1+\tilde{R}_t}{1+\overline{R}_t}\prod_{j=1}^{N}\left(\frac{1+\overline{w}_{jt}\overline{r}_{jt}}{1+w_{jt}\overline{r}_{jt}}\right)\left(\frac{1+w_{jt}\overline{R}_t}{1+\overline{w}_{jt}\overline{R}_t}\right)\right]^{1/N}.$$

12. (currently amended) A computer readable medium containing instructions ~~which stores code~~ for programming a processor to perform a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods *t*, where *t* varies from 1 to *T*, by determining attribution effects for issue selection $(1+I_{it}^{G})$ given by

$$1+I_{it}^{G} = \frac{1+w_{it}r_{it}}{1+w_{it}\overline{r}_{it}}\Gamma_t^I ,$$

and determining attribution effects for sector selection $(1+S_{it}^{G})$ given by

$$1+S_{it}^{G}=\left(\frac{1+w_{it}\bar{r}_{it}}{1+\overline{w}_{it}\bar{r}_{it}}\right)\left(\frac{1+\overline{w}_{it}\overline{R}_{t}}{1+w_{it}\overline{R}_{t}}\right)\Gamma_{t}^{S}\ ,$$

where r_{jt} is a portfolio return for sector j for period t, $\bar{r}_{jt}$ is a benchmark return for sector j for period t, w_{jt} is a weight for r_{jt}, $\overline{w}_{jt}$ is a weight for $\bar{r}_{jt}$, R is determined by

$$R=[\prod_{t=1}^{T}(1+R_{t})]-1$$

and $\overline{R}$ is determined by

$$\overline{R}=[\prod_{t=1}^{T}(1+\overline{R}_{t})]-1\,;$$ and determining the portfolio performance as

$$\frac{1+R}{1+\overline{R}}=\prod_{t=1}^{T}\prod_{i=1}^{N}(1+I_{it}^{G})(1+S_{it}^{G}).$$

13. (original) The computer readable medium of claim 12, wherein the values of $\Gamma_t{}^I$ are $\Gamma_{t}^{I}=\left[\frac{1+R_{t}}{1+\widetilde{R}_{t}}\prod_{j=1}^{N}\left(\frac{1+w_{jt}\bar{r}_{jt}}{1+w_{jt}r_{jt}}\right)\right]^{1/N}$ and the values of Γ_{t}^{S} are

$$\Gamma_{t}^{S}=\left[\frac{1+\widetilde{R}_{t}}{1+\overline{R}_{t}}\prod_{j=1}^{N}\left(\frac{1+\overline{w}_{jt}\bar{r}_{jt}}{1+w_{jt}\bar{r}_{jt}}\right)\left(\frac{1+w_{jt}\overline{R}_{t}}{1+\overline{w}_{jt}\overline{R}_{t}}\right)\right]^{1/N}.$$

14. (canceled)

15. (canceled)

16. (currently amended) A computer system, comprising:

a processor which performs ~~programmed to perform~~ a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t, where t varies from 1 to T, by determining attribution effects $1+Q_{ijt}^{G}$ given by

$$1+Q_{ijt}^{G}=\prod_{k}\left(\frac{1+a_{ijt}^{k}}{1+b_{ijt}^{k}}\right)\Gamma_{ijt}^{k}\ ,$$

where Γ_{ijt}^{k} are corrective terms that satisfy the constraint $\prod_{ij}(1+Q_{ijt}^{G}) = \frac{1+R_t}{1+\overline{R}_t}$, each of $a^{k}{}_{ijt}$ and $b^{k}{}_{ijt}$ is a coefficient for attribution effect *j*, sector *i*, and period *t*, the coefficients a_{ijt}^{k} and b_{ijt}^{k} are obtained from arithmetic attribution effects $Q_{ijt}^{A} = \sum_k a_{ijt}^{k} - \sum_k b_{ijt}^{k}$ which correspond to the attribution effects $1+Q_{ijt}^{G}$, R_t is a portfolio return for period *t*, $\overline{R}_t$ is a benchmark return for period *t*, *R* is determined by

$$R = [\prod_{t=1}^{T}(1+R_t)] - 1$$

and $\overline{R}$ is determined by

$$\overline{R} = [\prod_{t=1}^{T}(1+\overline{R}_t)] - 1, \text{ and}$$

determining the portfolio performance as $\frac{1+R}{1+\overline{R}} = \prod_{t=1}^{T}\prod_{i=1}^{N}\prod_{j=1}^{M}(1+Q_{ijt}^{G})$; and

a display device coupled to the processor for displaying a result of the geometric performance attribution computation.

17. (original) The system of claim 16, wherein M = 2, $1+Q_{i1t}^{G}$ are attribution effects for issue election given by $1+Q_{i1t}^{G} = \frac{1+w_{it}r_{it}}{1+w_{it}\overline{r}_{it}}\Gamma_t^{I}$, and $1+Q_{i2t}^{G}$ are attribution effects for sector selection given by $1+Q_{i2t}^{G} = \left(\frac{1+w_{it}\overline{r}_{it}}{1+\overline{w}_{it}\overline{r}_{it}}\right)\left(\frac{1+\overline{w}_{it}\overline{R}_t}{1+w_{it}\overline{R}_t}\right)\Gamma_t^{S}$,

where r_{it} is a portfolio return for sector *i* for period *t*, $\overline{r}_{it}$ is a benchmark return for sector *i* for period *t*, w_{it} is a weight for r_{it}, $\overline{w}_{it}$ is a weight for $\overline{r}_{it}$, the values of $\Gamma_t{}^{I}$ are

$$\Gamma_t^{I} = \left[\frac{1+R_t}{1+\tilde{R}_t}\prod_{i=1}^{N}\left(\frac{1+w_{it}\overline{r}_{it}}{1+w_{it}r_{it}}\right)\right]^{1/N}, \text{ and}$$

the values of Γ_t^{S} are $\Gamma_t^{S} = \left[\frac{1+\tilde{R}_t}{1+\overline{R}_t}\prod_{i=1}^{N}\left(\frac{1+\overline{w}_{it}\overline{r}_{it}}{1+w_{it}\overline{r}_{it}}\right)\left(\frac{1+w_{it}\overline{R}_t}{1+\overline{w}_{it}\overline{R}_t}\right)\right]^{1/N}$.

18. (currently amended) A computer readable medium containing instructions ~~which stores code~~ for programming a processor to perform a geometric performance attribution computation to determine portfolio performance, relative to a benchmark, over multiple time periods t, where t varies from 1 to T, by determining attribution effects $1+Q_{ijt}^{G}$ given by

$$1+Q_{ijt}^{G}=\prod_{k}\left(\frac{1+a_{ijt}^{k}}{1+b_{ijt}^{k}}\right)\Gamma_{ijt}^{k},$$

where Γ_{ijt}^{k} are corrective terms that satisfy the constraint $\prod_{ij}(1+Q_{ijt}^{G})=\frac{1+R_t}{1+\overline{R}_t}$, each of $a^{k}{}_{ijt}$ and $b^{k}{}_{ijt}$ is a coefficient for attribution effect j, sector i, and period t, R_t is a portfolio return for period t, the coefficients a_{ijt}^{k} and b_{ijt}^{k} are obtained from arithmetic attribution effects $Q_{ijt}^{A}=\sum_{k}a_{ijt}^{k}-\sum_{k}b_{ijt}^{k}$ which correspond to the attribution effects $1+Q_{ijt}^{G}$, $\overline{R}_t$ is a benchmark return for period t, R is determined by $R=[\prod_{t=1}^{T}(1+R_t)]-1$, and $\overline{R}$ is determined by $\overline{R}=[\prod_{t=1}^{T}(1+\overline{R}_t)]-1$, and determining the portfolio performance as $\frac{1+R}{1+\overline{R}}=\prod_{t=1}^{T}\prod_{i=1}^{N}\prod_{j=1}^{M}(1+Q_{ijt}^{G})$.

19. (original) The computer readable medium of claim 18, wherein M = 2, $1+Q_{i1t}^{G}$ are attribution effects for issue election given by $1+Q_{i1t}^{G}=\frac{1+w_{it}r_{it}}{1+w_{it}\overline{r}_{it}}\Gamma_t^{I}$, and $1+Q_{i2t}^{G}$ are attribution effects for sector selection given by

$$1+Q_{i2t}^{G}=\left(\frac{1+w_{it}\overline{r}_{it}}{1+\overline{w}_{it}\overline{r}_{it}}\right)\left(\frac{1+\overline{w}_{it}\overline{R}_t}{1+w_{it}\overline{R}_t}\right)\Gamma_t^{S},$$

where r_{it} is a portfolio return for sector i for period t, $\overline{r}_{it}$ is a benchmark return for sector i for period t, w_{it} is a weight for r_{it}, $\overline{w}_{it}$ is a weight for $\overline{r}_{it}$, the values of $\Gamma_t{}^{I}$ are

$$\Gamma_t^{I}=\left[\frac{1+R_t}{1+\tilde{R}_t}\prod_{i=1}^{N}\left(\frac{1+w_{it}\overline{r}_{it}}{1+w_{it}r_{it}}\right)\right]^{1/N},$$ and

the values of Γ_t^S are $\Gamma_t^S = \left[\frac{1+\tilde{R}_t}{1+\overline{R}_t} \prod_{i=1}^{N} \left(\frac{1+\overline{w}_{it}\overline{r}_{it}}{1+w_{it}\overline{r}_{it}} \right) \left(\frac{1+w_{it}\overline{R}_t}{1+\overline{w}_{it}\overline{R}_t} \right) \right]^{1/N}$.

20. (New) An arithmetic performance attribution method for determining portfolio performance, relative to a benchmark, over multiple time periods t, where t varies from 1 to T, comprising the steps of:

(a) determining coefficients $(A+\alpha_t)$, where the values α_t are defined as

$$\alpha_t = \left[\frac{R - \overline{R} - A\sum_{k=1}^{T}(R_k - \overline{R}_k)}{\sum_{k=1}^{T}(R_k - \overline{R}_k)^2} \right](R_t - \overline{R}_t),$$

where A has any predetermined value, R_t is a portfolio return for period t, $\overline{R}_t$ is a benchmark return for period t, R is determined by

$$R = [\prod_{t=1}^{T}(1+R_t)] - 1,$$

and $\overline{R}$ is determined by

$$\overline{R} = [\prod_{t=1}^{T}(1+\overline{R}_t)] - 1;$$

and

(b) determining the portfolio performance as

$$R - \overline{R} = \sum_{t=1}^{T}(A+\alpha_t)(R_t - \overline{R}_t) .$$

21. (New) The method of claim 20, wherein A is

$$A = \frac{1}{T}\left[\frac{(R-\overline{R})}{(1+R)^{1/T} - (1+\overline{R})^{1/T}} \right], \ where \quad R \neq \overline{R},$$

or for the special case $R = \overline{R}$:

$$A = (1+R)^{(T-1)/T}.$$

22. (New) The method of claim 20, wherein A = 1.

23. (New) The method of claim 20, wherein step (b) is performed by determining the portfolio performance as

$$R-\overline{R}=\sum_{t=1}^{T}\sum_{i=1}^{N}(A+\alpha_t)(I_{it}^A+S_{it}^A) \ ,$$

where I_{it}^A is an issue selection for sector i and period t, and S_{it}^A is a sector selection for sector i and period t.

24. (New) A geometric performance attribution method for determining portfolio performance, relative to a benchmark, over multiple time periods t, where t varies from 1 to T, comprising the steps of:

determining attribution effects for issue selection $(1+I_{it}^G)$ given by

$$1+I_{it}^G=\frac{1+w_{it}r_{it}}{1+w_{it}\overline{r}_{it}}\Gamma_t^I \ ,$$

and determining attribution effects for sector selection $(1+S_{it}^G)$ given by

$$1+S_{it}^G=\left(\frac{1+w_{it}\overline{r}_{it}}{1+\overline{w}_{it}\overline{r}_{it}}\right)\left(\frac{1+\overline{w}_{it}\overline{R}_t}{1+w_{it}\overline{R}_t}\right)\Gamma_t^S \ ,$$

where r_{jt} is a portfolio return for sector j for period t, $\overline{r}_{jt}$ is a benchmark return for sector j for period t, w_{jt} is a weight for r_{jt}, $\overline{w}_{jt}$ is a weight for $\overline{r}_{jt}$, R is determined by

$$R=[\prod_{t=1}^{T}(1+R_t)]-1$$

and $\overline{R}$ is determined by

$$\overline{R}=[\prod_{t=1}^{T}(1+\overline{R}_t)]-1;$$

and determining the portfolio performance as

$$\frac{1+R}{1+\overline{R}}=\prod_{t=1}^{T}\prod_{i=1}^{N}(1+I_{it}^G)(1+S_{it}^G).$$

25. (New) The method of claim 24, wherein the values of $\Gamma_t{}^I$ are

$$\Gamma_t^I = \left[\frac{1+R_t}{1+\tilde{R}_t}\prod_{j=1}^{N}\left(\frac{1+w_{jt}\bar{r}_{jt}}{1+w_{jt}r_{jt}}\right)\right]^{1/N}$$ and the values of Γ_t^S are

$$\Gamma_t^S = \left[\frac{1+\tilde{R}_t}{1+\bar{R}_t}\prod_{j=1}^{N}\left(\frac{1+\bar{w}_{jt}\bar{r}_{jt}}{1+w_{jt}\bar{r}_{jt}}\right)\left(\frac{1+w_{jt}\bar{R}_t}{1+\bar{w}_{jt}\bar{R}_t}\right)\right]^{1/N} .$$

26. (New) The method of claim 24, wherein the values of $\Gamma_t{}^I$ and $\Gamma_t{}^S$ are

$$\Gamma_t{}^I = \Gamma_t{}^S = \Gamma_t = \left[\left(\frac{1+R_t}{1+\bar{R}_t}\right)\prod_{j=1}^{N}\frac{(1+\bar{w}_{jt}\bar{r}_{jt})(1+w_{jt}\bar{R}_t)}{(1+w_{jt}r_{jt})(1+\bar{w}_{jt}\bar{R}_t)}\right]^{\frac{1}{2N}} .$$

27. (New) A geometric performance attribution method for determining portfolio performance, relative to a benchmark, over multiple time periods *t*, where *t* varies from 1 to *T*, comprising the steps of:

determining attribution effects $1+Q_{ijt}^G$ given by

$$1+Q_{ijt}^G = \prod_k\left(\frac{1+a_{ijt}^k}{1+b_{ijt}^k}\right)\Gamma_{ijt}^k ,$$

where Γ_{ijt}^k are corrective terms that satisfy the constraint $\prod_{ij}(1+Q_{ijt}^G) = \frac{1+R_t}{1+\bar{R}_t}$, each of $a^k{}_{ijt}$ and $b^k{}_{ijt}$ is a coefficient for attribution effect *j*, sector *i*, and period *t*, the coefficients a_{ijt}^k and b_{ijt}^k are obtained from arithmetic attribution effects $Q_{ijt}^A = \sum_k a_{ijt}^k - \sum_k b_{ijt}^k$ which correspond to the attribution effects $1+Q_{ijt}^G$, R_t is a portfolio return for period *t*, $\bar{R}_t$ is a benchmark return for period *t*, where *R* is determined by

$$R = [\prod_{t=1}^{T}(1+R_t)]-1$$

and $\bar{R}$ is determined by

$$\bar{R} = [\prod_{t=1}^{T}(1+\bar{R}_t)]-1; \text{ and}$$

determining the portfolio performance as

$$\frac{1+R}{1+\overline{R}}=\prod_{t=1}^{T}\prod_{i=1}^{N}\prod_{j=1}^{M}(1+Q_{ijt}^{G}).$$

28. (New) The method of claim 27, wherein M = 2, $1+Q_{i1t}^{G}$ are attribution effects for issue election given by $1+Q_{i1t}^{G}=\frac{1+w_{it}r_{it}}{1+w_{it}\overline{r}_{it}}\Gamma_t^I$, and $1+Q_{i2t}^{G}$ are attribution effects for sector selection given by $1+Q_{i2t}^{G}=\left(\frac{1+w_{it}\overline{r}_{it}}{1+\overline{w}_{it}\overline{r}_{it}}\right)\left(\frac{1+\overline{w}_{it}\overline{R}_t}{1+w_{it}\overline{R}_t}\right)\Gamma_t^S$,

where r_{it} is a portfolio return for sector i for period t, $\overline{r}_{it}$ is a benchmark return for sector i for period t, w_{it} is a weight for r_{it}, $\overline{w}_{it}$ is a weight for $\overline{r}_{it}$, the values of Γ_t^I are

$$\Gamma_t^I=\left[\frac{1+R_t}{1+\tilde{R}_t}\prod_{i=1}^{N}\left(\frac{1+w_{it}\overline{r}_{it}}{1+w_{it}r_{it}}\right)\right]^{1/N}, \text{ and}$$

the values of Γ_t^S are $\Gamma_t^S=\left[\frac{1+\tilde{R}_t}{1+\overline{R}_t}\prod_{i=1}^{N}\left(\frac{1+\overline{w}_{it}\overline{r}_{it}}{1+w_{it}\overline{r}_{it}}\right)\left(\frac{1+w_{it}\overline{R}_t}{1+\overline{w}_{it}\overline{R}_t}\right)\right]^{1/N}$.